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Gymnastics Program Involving Gym-Ball Exercises Meant to Prevent Heart Diseases

Jozsef Hidi*

National University of Physical Education and Sport, Constantin Noica 140, Bucharest, Romania

Abstract

This study is an applicative component of a research program carried out by gymnastics discipline from the Sportive and Physical Education Department.
It has well known the benefit of physical exercises for maintenance of health and good life style.
Condition for this benefit is the perfect choose and dosage, graduation of the exercises, depending of those who are practicing them. Trough gymnastic exercises we understand, in this study, the analytic exercises, with formative character, addressed to the completely human body, being exercised whit gym-balls. The program is addressed to female population according to the research program.

Keywords: Gymnastics, fitness, gym-ball, heart rate;

1. Main text

This study is an applicative component of a research program carried out by gymnastics discipline from the Sportive and Physical Education Department.

As well known, gymnastics has generated an extraordinary variety of spin-offs, among them the well-known fitness programs, like “Pilates”, “Aerobic gymnastics” and many others (Hidi, 2007).

From practicing gymnastics, the human body can derive huge benefits, on condition the exercises are well selected and tailored to the practitioners’ needs (Baiasu, 1973; Hidi, 2008).

For the purposes of this study, gymnastics exercises are defined as analytical, formative exercises addressing the body as a whole that can be performed with a variety of objects (Hidi, Dina and Corlaci, 2011), in our concrete case with gym balls. Always we can say:

- Gymnastics exercises are fundamental in slowing cardiovascular disorders.

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .
E-mail address: iozsefhidi@yahoo.com

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- These exercises are highly accessible and adaptable, they allow infinite variations and precise dozing, they are efficient and attractive.
- This exercise program targets the female population.

2. Material and methods

2.1. Assumptions

- This exercise program can help improve the human body's cardiovascular functions.
- The program can also generate positive psychological effects, helping practitioners relax and achieve mental balance.

2.2. Objectives :

- The main objective of this gym-ball exercise program is to improve the practitioners' functional indicators, related to work positions.
- An additional objective is to raise awareness among practitioners about the benefits of the program, and as a consequence attract a higher number of participants.

2.3. Tasks:

- To develop a gymnastics exercise program using gym-balls.
- To implement the program in an effective and attractive manner.
- To conduct interactive activities with practitioners aimed at raising their awareness about the effects the exercises may have.
- The research program was carried out at U.N.E.F.S. between October 2012 – December 2012. The program involved 12 first-year female students.

  During this interval:

  - The exercise program was applied once a week;
  - The total length of the program was 8 weeks;
  - The average duration/week was 50 minutes;
  - The total duration of the exercise program was 400 minutes;
  - The program included gym-ball exercises.

The exercise program included complexes of 16 to 20 exercise structures. The number of exercises performed depended on the complexity of the structures and the basic positions used (complexes including fewer structures required a larger number of repetitions and the other way round).

Exercises were structured in such a way as to activate all muscle groups and joints, they used various basic positions, from standing up to lying down, and they alternated stretching, squeezing, and relaxation, ending with a set of jumping structures.

Participants could also derive additional benefits from the use of gym-ball during this exercise program. Some of these benefits are listed below:

- Gym-balls can be used to lock various body segments, which allows precise localization of the action of various muscle groups and joints, increasing difficulty by maintenance of balance.

- Gym-balls can be used as "movement limiters", which allows improved formation of the general basis of movement;
- Gym-balls can be used to perform throwing and catching exercises, which makes the overall activity more entertaining, while also helping practitioners develop those skills;
- Gym-balls can also be used to perform balancing exercises (different support positions, sit positions), which also makes the activity more entertaining and helps practitioners improve their balancing skill.

The students' heart rate was monitored during the implementation of the program, and measurements were taken regularly at the following moments in time:

- Before they started an exercise complex,
- When they changed their basic position,
- After they completed an exercise complex,
- 3 minutes after having completed the exercise complex (see Table 1).

Table 1. Average values of heart rate – gym-ball exercises

Week	1	2	3	4	5	6	7	8
Before exercises	120	118	118	114	114	116	116	116
Changing work position								
Stand	114	112	116	114	114	116	110	112
On the knees	118	120	120	118	116	118	112	116
Sitting	128	130	124	128	124	130	130	126
Leaning	116	114	112	118	118	116	114	114
Support on gym-ball	142	140	144	138	140	138	138	140
At the end of exercises	138	134	136	134	138	138	136	134
3 minutes after exercises	114	110	104	106	112	110	112	108

Moreover, the program coordinator was in constant dialogue with the participants, in order to clarify the role and effects of each and every exercise.

The exercises were performed on a musical background, which generated a pleasant, stimulating, but also relaxing atmosphere.

An analysis of the data collected has revealed the following:

- Heart rate generally decreases when the basic position assumed by practitioners is standing, as most exercise structures performed in this position involve stretching, throwing and catching .
- Heart rate generally increases when the basic position assumed by practitioners is kneeling, and even more when sitting on the gym-ball, and reach the maximum level during support positions on the gym-ball.
- Heart rate variations are obvious during jumping exercises.
- Heart rates generally fall back to normal levels 3 minutes after the effort is discontinued.

3. Conclusions

An analysis of the heart rate variation data collected has revealed that the basic assumption of our study, i.e. that this exercise program can improve the body's cardiovascular functions, has been confirmed.

In case we aim to increase the practitioners' heart rate by performing this exercise program, it is advisable to use exercise structures performed in a sitting or support on the gym-ball position.

In case the aim is to maintain heart rate variation within narrow limits, it is advisable to select exercises performed standing or lying down.

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